

LIFE HISTORY OF CORIZUS LATERALIS SAY.*

BY J. C. HAMBLETON.

This insect was first described by Say in 1825 under the name *Coreus lateralis*. Again in 1852 Dallas described it as *Rhopalus punctipennis*. Later, in 1859, Signoret in his "Monograph of the Genus *Corizus*" acknowledged both species, having been guided largely by color characters.

There are in all twelve known species of the genus in North America,† this being one of the most widely distributed, though apparently confined to the United States. It has always been a source of trouble to collectors because of its extreme variability in color.

Up to the present, little has been known and nothing published in regard to the life history or habits of any of them. Prof. Herbert Osborn found nymphal forms of *hyalinus* Fab. a few years since on a species of *Euphorbia*, but has published no complete description of its stages.‡

Lateralis was found this past summer in great abundance in the neighborhood of Columbus, Ohio, wherever its host plant was found. This is *Polygonum pennsylvanicum* a native annual that is quite generally distributed over the whole of the United States. Adult insects could always be taken also on colonies of *Polygonum persicaria*, a species introduced from Europe, and also widely distributed, however neither eggs nor young were found upon it. Several broods of young were reared to maturity on *persicaria* in the laboratory and no difference could be observed between them and those reared on *pennsylvanicum* where the eggs were deposited. The adult forms fed freely upon *persicaria* in captivity and apparently do so in the field since they could always be taken on colonies of this plant, but as aforesaid, diligent search failed to reveal either eggs or young. This is evidently a case of partial adaptation that has taken place since the advent of the plant to this country. The question may be asked, why does the female not deposit her eggs on this plant as well as on the other when she herself feeds upon it and when her young will thrive upon it?

* Read at the meeting of the Ohio Academy of Science, at Delaware, O., Nov. 26th. 1909.

† Ann. Ent. Soc. of America, Vol. I, p. 133.

‡ Bull. No. 46, U. S. Dept. of Ag. Div. of Entom. p. 89.

A close examination of the two plants in question will, at least, suggest an answer. The petioles of *pennsylvanicum*, where the eggs are deposited, are thickly beset with glandular hairs, while those of *persicaria* are entirely smooth. These hairs may act as the immediate stimulus to oviposition and also may serve the insect in a mechanical way during the act.

Eggs were first found early in August, and at this time young in all stages of development were also found so that oviposition must have begun early in July, and perhaps earlier. The eggs are usually deposited on the petioles in small clusters of from two to twelve, a few centimeters below where the flowers begin, though occasionally they can be found singly and also sometimes among the blossoms themselves. They are not attached directly to the plant, but by means of a fine thread from one to two millimeters long. They are at first of a light yellow waxy color. This changes to a bright red as the time for hatching approaches. This occurs apparently in about six days, though this could not be definitely determined as no female was observed depositing her eggs, and none did so in captivity. Six days was the longest time any eggs delayed in hatching after being collected.

It seems probable that more than one brood may be reared during the summer. Either this is the case or the egg-laying period is very much prolonged, for eggs and young were found until the autumn frosts had killed the host plants.

The young when first hatched, like each instar when first moulted, is quite red in color. Upon drying and hardening the head and thorax turn black and the abdomen a light green. After feeding, the latter becomes a pale greenish yellow. These colors are kept unchanged until the first moult though toward the latter part of the first instar a faint red spot is seen just above the dorsal glands, and the black of head and thorax shows a reddish tinge. Before feeding, the rostrum which is carried beneath the body is longer than the insect itself and can be seen protruding beyond the extremity of the abdomen.

Within two hours after hatching, the young find their way up the stem to the blossoms. The petals of this plant are persistent and enclose the young seed until it is ripe.

The rostrum is inserted into these and search is apparently made for the young seed, for the rostrum can be seen to be thrust in at different angles without taking it out of the first incision. When they have found the spot that suits them the abdomen

soon becomes distended and is henceforth quite the most prominent part of the insect. They remain during the whole of this instar hidden among the blossoms. Their small size permits them to do this with ease. Their color during this stage is decidedly protective, as indeed it is during all stages. The color of the petals is pink and red while the stem and lower parts of the blossoms are a pale green. The black of the head and thorax blends perfectly with the shadows while the paler color of the abdomen harmonizes with that of the stems.

This instar lasts from two to three days when the insect anchors itself by extending its fore legs as far forward as possible and its hind ones far back. The skin splits open longitudinally on the thorax and the insect slowly pulls itself out. At first it is a pale red, but this deepens and in some cases passes to a decided brown. The color of the entire insect is now quite uniform except on very close inspection. The head and thorax though slightly darker than the abdomen have permanently lost their black color. This is in keeping with their new surroundings for their increased size no longer permits them to remain below in the shadows but they must now remain outside where the prevailing colors are red and pink. Toward the latter part of this stage the wing-pads may be faintly distinguished beneath the skin, and two black spots appear on the abdomen, one on either side of the dorsal glands. This instar lasts from two to four days.

The most notable change in the third instar is the appearance of the wing-pads clearly outlined, with their veins showing as black stripes. The thorax is also more clearly defined and the eyes have become more prominent. This instar is of from three to five days duration.

In the fourth stage, which lasts from five to seven days, the head is clearly defined by the constriction between it and the thorax. It now has more nearly the form of the head of the adult insect. The prothorax has also become more prominent, and the scutellum becomes faintly visible. The wing-pads have become quite prominent with their outer margins and three veins black.

The fifth and last instar lasts from three to nine days. The scutellum, in this stage, is clearly defined and the wing-pads have become very prominent, reaching almost to the fourth abdominal segment. The antennae have apparently reached their full development though the tarsi are, as in all the nymphal stages, but two jointed. The eyes are very well developed but

the ocelli have not yet appeared. The body is now almost as large as that of the adult and has the same general appearance.

There is one character common to all the nymphal stages of this insect except the first, which gives some insight into its phylogeny. This is the banded legs. These are lost in the adult *lateralis*, but are present in *sidac*, its tropical relative, which barely reaches our southern borders. This seems to indicate that probably *sidac* is the progenitor of *lateralis* and that this change has been the effect of climate.

While the different stages may vary much in duration that of the sum total of all does not. This is, in all cases observed, from twenty to twenty-one days.

There yet remains one important fact to be learned in the life history of this insect. It is not known positively how it passes the winter. There can be little doubt, however, that, it hibernates in the adult stage. It is inconceivable that either the eggs or young could endure the winter after their host plant has perished. As before stated, young could be found in all stages until frost, and then all, including the adults disappeared. It is probable that the former were killed while the latter sought shelter among rubbish.

It was not definitely determined whether the host plant is injured by the attack of this insect or not. There was, however, some indication that such is the case. One colony that harbored an extraordinary number of insects ripened very few seed. Some heads not having more than a half dozen seed that reached maturity.

Many of the eggs collected failed to hatch. Instead of turning red they soon became almost black and quite opaque. Later, from these eggs small hymenopterous parasites would emerge, whose identity has not yet been determined.

DESCRIPTION.

EGG.

In size, .5 by .7 mm.,—oval when viewed from the side but somewhat triangular when viewed from the end.

Color: Yellowish, pale, turning red before hatching. Attached by slender thread to petioles of host plant in clusters of two to twelve.

FIRST INSTAR.

1 mm. in length. Head and thorax prominent, not separated by constriction. Abdomen small, consisting of nine segments, the fifth of which is interrupted at the middle and two small glands are

placed between. Antennae of four segments, as in the adult. Legs similar to those of adult except the tarsi which are two-jointed.

Color: Head and thorax black, abdomen greenish, changing to yellowish green. Antennae and legs reddish. Whole insect covered with stiff hairs which are prominent on the head.

SECOND INSTAR.

2 mm. in length. Head and thorax as in first instar, except as to color.

Color: Whole insect of a reddish cast due to small red spots and blotches on a yellowish background. Antennae with two narrow dark stripes extending through first three segments. 4th segment darker toward the vertex. Two black spots on interrupted segment, one on either side of dorsal glands. Legs yellowish banded with red. Entire insect with coarse hair.

THIRD INSTAR.

3 mm. in length. Eyes more prominent. Wing-pads appearing with veins black. Two black spots on 2nd abdominal segment, 2 on 4th and 2 on 5th. Other characters as in second instar.

FOURTH INSTAR.

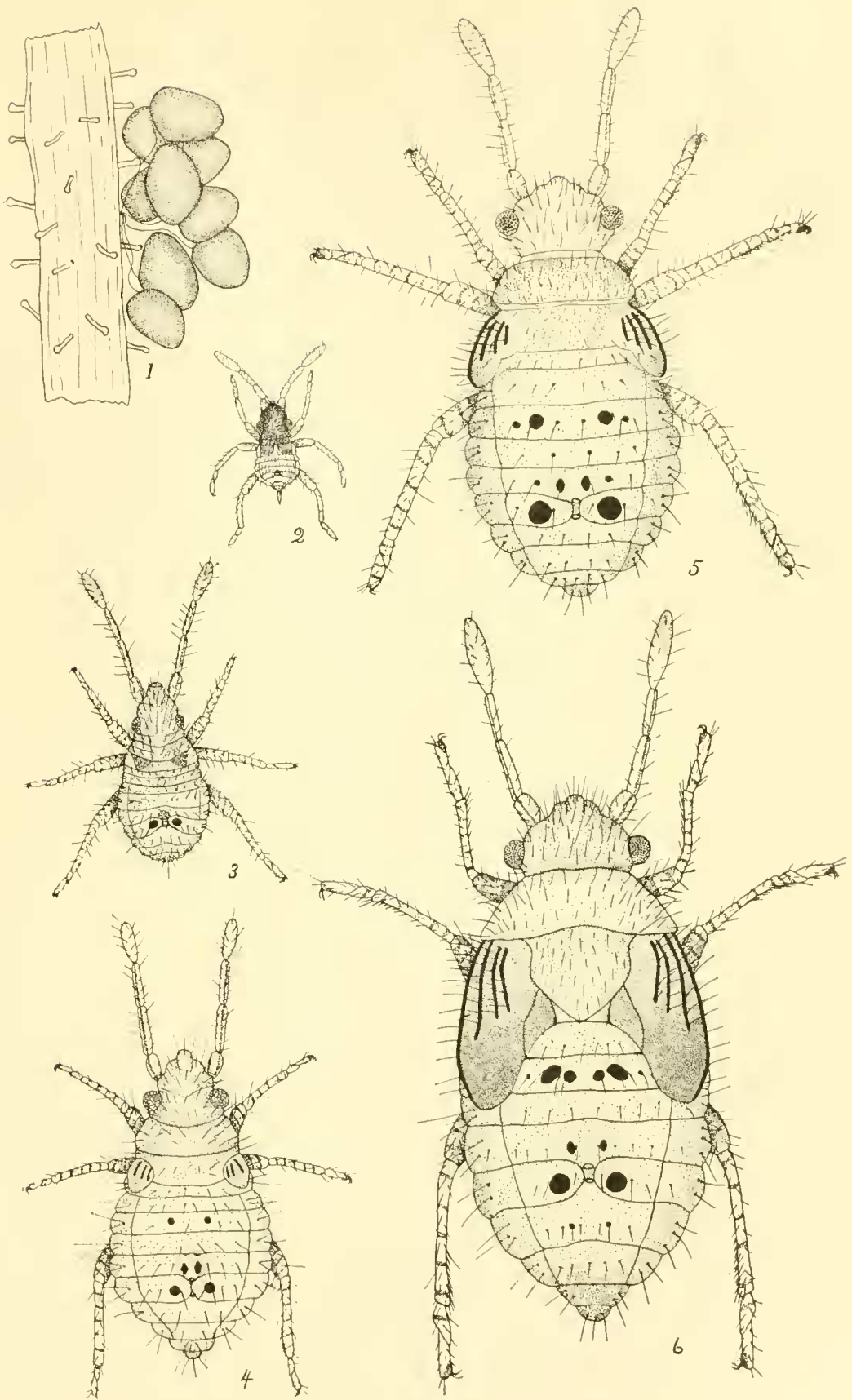
4 mm. in length. Head separated from thorax by constriction. Prothorax clearly defined. Wing-pads more prominent. Abdominal spots sometimes more numerous, though the six of the third instar always present. Scutellum faintly outlined by lighter shade.

FIFTH INSTAR.

5 mm. in length. Wing-pads reaching almost to 4th segment of abdomen, much darker in color especially toward the extremities. Spots on 2nd segment increased to four, others as above.

DESCRIPTION OF PLATE.

1. Cluster of eggs attached to host-plant.
2. First instar of *Corizus lateralis* Say.
3. Second instar of *Corizus lateralis* Say.
4. Third instar of *Corizus lateralis* Say.
5. Fourth instar of *Corizus lateralis* Say.
6. Fifth instar of *Corizus lateralis* Say.



J. C. Hambleton.

